



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,048	04/15/2004	Areal Guerra Rogelio	G80-019 DIV	7402
21706	7590	10/26/2007		
NOTARO AND MICHALOS 100 DUTCH HILL ROAD SUITE 110 ORANGEBURG, NY 10962-2100			EXAMINER CORDRAY, DENNIS R	
			ART UNIT 1791	PAPER NUMBER
			MAIL DATE 10/26/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/825,048

Applicant(s)

ROGELIO, AREAL GUERRA

Examiner

Dennis Cordray

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments and amendments, see pp 6-8, filed 3/16/2007, with respect to the claim for benefit of prior filed application 09/744655 have been fully considered and are persuasive. The error in dimensions of the magnesium particles in the prior application has been shown to be a typographical or translation error. The requirement to change the instant application to a continuation-in-part has been withdrawn. Applicant's arguments and amendments have overcome the rejections of Claims 1-6 under 35 U.S.C. 11, 1st and 2nd paragraphs. Therefore, the rejections have been withdrawn.

Applicant's arguments with respect to the rejections of Claims 1-6 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive.

Applicant argues on pp 8-11 that Worsfold and Smith '685 disclose methoxy magnesium methyl carbonate (MMMC), isopropoxy magnesium isopropyl carbonate (PMPC), isopropoxy zinc isopropyl carbonate (MZMC) and ethoxy magnesium ethyl carbonate (EMEC) but fail to disclose propoxy magnesium propyl carbonate (carbonated magnesium di-n-propylate). Applicant admits on p 10 that Worsfold and Smith '685 disclose that other carbonated magnesium alkoxides can be used. However, Applicant argues that none of the references illustrates preparation of the claimed compound with yields or concentrations as high as those of the instant invention. Applicant also argues that a person of ordinary skill in the art, in view of

Art Unit: 1791

Smith '856 or Smith '685, would have tried to produce the propoxy magnesium propyl carbonate from ethoxy magnesium and n-propanol rather than the claimed method.

Smith '685 teaches that particularly useful alternate deacidification agents include propoxy magnesium propyl carbonate (col 6, lines 42-49). Smith '856 and Smith '685 illustrate preparation of MMMC and PMPC using ethoxy magnesium. However, Smith '856 discloses more generally reacting magnesium metal or metal alkoxide with an alcohol having from 1-4 carbon atoms (col 3, lines 51-61). Smith '856 also teaches the carbonated product in typical concentrations up to 75% in methanol and up to 37.5% in ethanol or isopropanol (col 4, lines 19-23). One of ordinary skill in the art, having knowledge of both Smith references, would expect to produce propoxy magnesium propyl carbonate in propanol at similar concentrations.

Worsfold discloses producing methoxymagnesium methyl carbonate and ethoxymagnesium ethyl carbonate comprises reacting magnesium metal with methanol or ethanol to produce magnesium methoxide or magnesium ethoxide respectively and carbonation is performed by treating a mixture of the methoxide in methanol or ethoxide in ethanol with carbon dioxide (p 5, line 34 to p 6, line 8). Worsfold discloses that other carbonated magnesium alkoxides can be prepared using other appropriate solvents to produce the corresponding homologs (p 6, lines 12-16). From the disclosure of Worsfold, one of ordinary skill in the art would obviously choose n-propanol to make propoxy magnesium propyl carbonate.

In addition, alternative methods of producing carbonated magnesium alkoxides, as taught by Bell et al, would have been generally known to those of ordinary skill in the

Art Unit: 1791

art. Bell et al teaches reacting magnesium with the appropriate alcohol to produce magnesium methoxide (alcohol-methanol), magnesium ethoxide (alcohol-ethanol), magnesium propoxide (alcohol-propanol), magnesium isopropoxide (alcohol-isopropanol) and carbonating the product (col 2, lines 24-57). In addition, Bell et al teaches reacting at temperatures from 10 to 120 °C (which includes the boiling point of n-propanol), reacting with reflux and cooling to control reaction rate. From the teachings of the prior art and knowledge generally available, it would have been obvious to one of ordinary skill to make propoxy magnesium propyl carbonate, as taught by Smith '685 to be a particularly useful alternate deacidification agent, using n-propanol by the process of Worsfold or Bell et al as a functionally equivalent process having predictable results. Reacting at a boiling point of the solution would have been obvious to provide adequate refluxing.

Sullivan was used only to teach that a low-boiling toluene-propanol azeotrope is generally known in the art. Using azeotropic distillation and separation to remove alcohol from the solutions is also well known as taught by Bell et al. Combining the teachings of Bell with the general knowledge of the toluene-propanol azeotrope would have been an obvious option to one of ordinary skill, with predictable results.

The rejections are maintained, and have been modified to treat the amendments.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 1791

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (6676856) or Worsfold (CA 2142195) in view of Smith (4860685).

Smith ('856) discloses method for deacidification of cellulosic materials by mass deacidification (considered by the Examiner to be a bulk treatment) or by spraying, using a composition comprising a carbonated magnesium alkoxide in a lower alcohol (1 to 4 carbon atoms) solvent having a moisture content of less than 100 ppm. The method of making the carbonated magnesium alkoxide can comprise reacting magnesium metal in the form of metal chips (size unspecified) with a lower alcohol and carbon dioxide. The products have concentrations of 25 to 75%. (Abstract, col 1, lines 12-17; col 3, line 51 to col 4, line 24; col 10, lines 30-47). Excess solvent is filtered out, leaving a deacidification concentrate, which is then diluted with an ultra dry solvent to make the deacidification composition (col 5, lines 13-21). The preferred diluent is HFC-134a (1,1,1,2-tetrafluoroethane) because the diluent has almost no detrimental affect on printing inks and forms stable compositions with the carbonated magnesium alkoxide (col 5, lines 50-54; col 6, lines 26-30). Smith ('856) teaches that it is known in prior art that moisture in anhydrous raw materials presents significant problems with known cellulose treatment methods (col 1, lines 38-53). Smith ('856) thus treats all solvents to reduce their moisture content prior to use (col 2, lines 51-64).

Worsfold discloses a composition for deacidification of cellulosic material comprising a carbonated magnesium alkoxide, an alcohol solvent, and hydrofluorocarbon diluent. The composition is applied by spraying the cellulosic

Art Unit: 1791

material with the composition (Abstract). The method for production of methoxymagnesium methyl carbonate and ethoxymagnesium ethyl carbonate comprises reacting magnesium metal with methanol or ethanol to produce magnesium methoxide or magnesium ethoxide respectively and carbonation is performed by treating a mixture of the methoxide in methanol or ethoxide in ethanol with carbon dioxide (p 5, line 34 to p 6, line 8). Worsfold discloses that other carbonated magnesium alkoxides can be prepared using other appropriate solvents to produce the corresponding homologs (p 6, lines 12-16). Suitable diluents include fluorinated ethanes and propanes (p 6, lines 23-27; p 7, lines 13-14). Worsfold only discloses concentrations of carbonated magnesium alkoxide up to 20%.

Smith ('856) and Worsfold do not specifically disclose propoxymagnesium propyl carbonate (carbonated magnesium di-n-propylate) as a deacidification agent; although Worsfold does disclose that other carbonated magnesium alkoxides can be used.

Smith ('685) discloses a method for deacidification of cellulosic materials by spraying with a composition comprising a carbonated magnesium alkoxide (ethoxymagnesium ethyl carbonate and propoxymagnesium propyl carbonate are given as particularly useful examples), a lower alcohol solvent having from 1 to 3 carbon atoms and a chlorofluorocarbon diluent (Abstract, col 5, lines 13-35; col 6, lines 42-49).

The art of Smith ('856), Worsfold, Smith ('685) and the instant invention are analogous as pertaining to making and using deacidification compositions for cellulosic materials. It would have been obvious to one of ordinary skill in the art to use propoxymagnesium propyl carbonate as the deacidification agent in the composition of

Art Unit: 1791

Smith ('856) or Worsfold in view of Smith ('685) as a particularly useful and functionally equivalent option having predictable results. Using a dry carbon dioxide would be obvious to prevent unwanted side reactions per the teaching of Smith ('856). Note that Smith ('856) is usable as a reference under 35 U.S.C. 102(e) and thus is also usable under 35 U.S.C. 103(a). Smith ('856) discloses concentrations of carbonated magnesium alkoxide up to 75%; Worsfold discloses concentrations for similar products up to 20%. Thus, usable concentration ranges have been disclosed in prior art that encompass the claimed range and one of ordinary skill in the art would find it obvious to obtain solution concentrations within the claimed range as a functionally equivalent option yielding predictable results.

Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (6676856) or Worsfold (CA 2142195) in view of Smith (4860685), as applied above to Claims 1 and 6, and further in view of Bell et al (3706665) and Sullivan (2265220).

Smith ('856), Worsfold, and Smith ('685) do not disclose reacting magnesium with propanol in the presence of iodine at a boiling point temperature or refluxing. Smith ('856), Worsfold, and Smith ('685) also do not disclose using azeotropic distillation to remove excess propanol.

Bell et al disclose a process for preparing magnesium alkoxides, including magnesium n-propoxide that comprises reacting clean magnesium metal with excess alkanol (n-propanol for the propoxide) and using iodine as a catalyst (col 2, lines 24-32).

Art Unit: 1791

Toluene can be added (col 2, lines 34-37). The reaction can be conducted at the refluxing temperature, which is a boiling temperature of the mixture, or can be cooled to moderate the reaction (col 2, lines 45-51). The reaction product of magnesium alkoxide can be carbonated by treating the solution with gaseous carbon dioxide to produce a product at least 50%, and preferably at least 60% carbonated (col 2, lines 52-71). In some embodiments, the solution of magnesium alkoxide in alcohol also contains an aromatic hydrocarbon such as toluene, which can be added before, during or after the reaction of magnesium with the alcohol (col 2, lines 34-45). Excess alcohol can be removed by azeotropic distillation (col 3, lines 25-30). Although an azeotrope between the propanol and toluene is not specifically disclosed by Bell et al, the presence of toluene in the mixture would form the azeotrope during the distillation process. Azeotropic separation is well known, as taught by Sullivan (p 1, right col, lines 20-35). Sullivan also teaches that toluene and propanol form a low boiling azeotrope.

The art of Smith ('856), Worsfold, Smith ('685), Bell et al, Sullivan and the instant invention are analogous as pertaining to preparing magnesium alkoxides. It would have been obvious to one of ordinary skill in the art to use iodine as a catalyst in preparing the magnesium alkoxides in the process of Smith ('856) or Worsfold in view of Smith ('685) and further in view of Bell et al and Sullivan as a method known in the art of initiating the reaction. It would also have been obvious to employ azeotropic separation using the toluene-propanol azeotrope to remove the excess alcohol as a well known technique in the art, with predictable results. Refluxing the reacting mixture would have been obvious to avoid loss of solvent during the reaction. The exothermic character of

Art Unit: 1791

the reaction would have been known and one of ordinary skill would have found it obvious to control or reduce the temperature to control the reaction rate.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Feightinger et al (3920713) discloses a method of making metal alkoxides by reacting the metal with an alcohol in the presence of an aromatic hydrocarbon.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.


Art Unit: 1791

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DRC

DRC


STEVEN P. GRIFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700